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EXAMINER	
GEBRIEL, SELAM T	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/662,763	STALLER, NORMAN D.	
	Examiner	Art Unit	
	SELAM GEBRIEL	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 8, 12, 17, 24 and 28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. **The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:**

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1 – 5, 7 - 21 and 23 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farrington (US 4,941,011) in view of Yamada (US 2002/0090145 A1).**

Regarding claim 1, Farrington disclose an electronic camera (Figure 1 Single Lens Reflex Camera 10), comprising:

An image capture device (Figure 1 Film Plane 16 and Film Advancing apparatus 76) adapted for capturing an image scene (Col 3 Line 16 and Col 5 Line 39 - 49);

A photocell (Figure 1 Visible Light Sensor 32 and Non Visible Frequencies Sensor) adapted for sensing a level of light energy received from said image scene (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The

amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24");

A scanning aperture shutter unit (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) located to control light energy received by said electronic image capture device (Figure 1 Film Plane 16 and Film Advancing apparatus 76) and the photocell (Figure 1 Visible Light Sensor 32 and Non Visible Frequencies Sensor) [Col 3 Lines 15 – 56]; and

A flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42); and

An exposure control system (Figure 1 Exposure Electronics Module 48) wherein said exposure control system (Figure 1 Exposure Electronics Module 48) is adapted to:

Integrate the level of light energy sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are sequentially integrated), Illuminate said flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) during said image capture responsive to the integrated level of light energy reaching a first predetermined level (Col 7 Lines 21 – 53 "The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_1 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by

sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22. The ambient and artificial light respectively sensed by the sensors 32 and 28 are sequentially integrated and their integrated values stored by the track and hold system 52"), and

Extinguish said flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) and close said scanning aperture shutter unit (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) responsive to the integrated level of light energy reaching a second predetermined level (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial**

scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22").

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band camera 16 that uses a CCD camera and the image captured with this camera is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

The combination of Farrington and Yamada does not clearly discloses the flash light illuminated when the integrated level of light reaching a first predetermined level and extinguished when the integrated level of light reaching a second predetermined level.

KSR rational hereby is used that using a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing

when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure.

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 2, Farrington further discloses the camera of claim 1, wherein said exposure control system is adapted to illuminate said flash unit once a predetermined amount of ambient light energy is sensed by said photocell (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene

illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**”).

Regarding claim 3, Farrington further discloses the camera of claim 2, wherein said exposure control system is adapted to extinguish said flash unit once a predetermined amount of infrared spectrum energy is sensed by said photocell during flash unit illumination (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24**

at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22").

Regarding claim 4, Farrington further discloses the camera of claim 1, wherein said photocell includes a visible spectrum photocell and an infrared spectrum photocell, and further wherein, said exposure control system is adapted to use said visible spectrum photocell to sense ambient light energy received from said image scene prior to illumination by said flash unit and to use said infrared photocell for sensing infrared spectrum energy received from said image scene during illumination by said flash unit (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is**

sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22”).

Regarding claim 5, Farrington further discloses the camera of claim 4, wherein said scanning aperture shutter includes separate apertures for said image capture device, said visible spectrum photocell and said infrared spectrum photocell (See Figure 1 Separate Apertures are used for the film plane and Visible Light Sensor & Non-Visible Frequency Sensor).

Regarding claim 7, Farrington further discloses the camera of claim 1, wherein said flash unit is constructed integrally with said camera (Col 4 Lines 9 – 13 “The camera 10 is also provided with an electronic flash apparatus 34 together with apparatus for controlling its energization in order to provide a portion of the exposure value to illuminate a scene to be photographed”).

Regarding claim 8, Farrington discloses an electronic camera (Figure 1 Single Lens Reflex Camera 10), comprising:

An image capture device (Figure 1 Film Plane 16 and Film Advancing apparatus 76) adapted for capturing an image scene (Col 3 Line 16 and Col 5 Line 39 - 49);

A scanning aperture shutter unit (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) located to control light energy

received by said electronic image capture device (Figure 1 Film Plane 16 and Film Advancing apparatus 76) and the photocell (Figure 1 Visible Light Sensor 32 and Non Visible Frequencies Sensor) [Col 3 Lines 15 – 56]; and

A flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) oriented to illuminate said image scene (Col 4 Lines 10 – 13);

A photocell unit (Figure 1 Visible Light Sensor 32 and Non Visible Frequencies Sensor) adapted for sensing a level of visible spectrum energy and infrared spectrum energy received from said image scene, wherein the scanning aperture shutter is able to control said sensed light energy (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24"); and

An exposure control system (Figure 1 Exposure Electronics Module 48) responsive and said flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42), wherein said exposure control system (Figure 1 Exposure Electronics Module 48) is adapted to:

Integrate the level of visible spectrum energy and infrared spectrum energy

sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are sequentially integrated),

Illuminate said flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) during said image capture responsive to the integrated level of visible spectrum energy and infrared spectrum energy reaching a first predetermined level, and extinguish said flash unit and close said scanning aperture shutter responsive to the integrated level of visible spectrum energy and infrared spectrum energy reaching a second predetermined level (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the**

exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22”).

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band camera 16 that uses a CCD camera and the image captured with this camera is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

The combination of Farrington and Yamada does not clearly discloses the flash light illuminated when the integrated level of light reaching a first predetermined level and extinguished when the integrated level of light reaching a second predetermined level.

KSR rational hereby is used that using a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure.

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 9, Farrington further discloses the camera of claim 8, wherein said visible spectrum and infrared spectrum photocells are separate devices (See Figure 1, The Visible and non visible sensors are separate devices).

Regarding claim 10, Farrington further discloses the camera of claim 9, wherein said shutter includes separate, proportionately operable, variable apertures for said image capture device and said photocell unit (See Figure 1 Separate Apertures are used for the film plane and Visible Light Sensor & Non-Visible Frequency Sensor).

Regarding claim 11, Farrington further discloses the camera of claim 8, wherein said flash unit is a quenchable strobe light (Col 4 Lines 10 – 13, the electronic flash apparatus is extinguishable or quenchable).

Regarding claim 12, Farrington discloses method for electronic image capture using a fill flash function (Col 7 Lines 21 – 41, The exposure control system employed herein of the proportional fill flash type), comprising:

Using a scanning aperture shutter (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) to control light energy received

by an electronic image capture device (Col 3 Lines 15 – 56);

Sensing a level of visible ambient light energy and infrared energy received from an image scene and controlled by said scanning aperture shutter (Col 3 Lines 57 – 68, “The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24”); and

Controlling said scanning aperture shutter (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) and a flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) during image capture in response to said sensing (Col 7 Lines 21 – 53), wherein said controlling comprises:

Integrating the level of visible ambient light energy and infrared energy sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are sequentially integrated), illuminating a flash unit during said image capture responsive to the integrated level of visible ambient light energy and infrared energy reaching a first predetermined level, and extinguish said flash unit and closing a scanning aperture shutter unit responsive to the integrated level

of visible ambient light energy and infrared energy reaching a second predetermined level (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**").

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band <u>camera</u> 16 that uses a CCD <u>camera</u> and the image captured with this <u>camera</u> is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

The combination of Farrington and Yamada does not clearly discloses the flash light illuminated when the integrated level of light reaching a first predetermined level and extinguished when the integrated level of light reaching a second predetermined level.

KSR rational hereby is used that using a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure.

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second

predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 13, Farrington further discloses the method of claim 12, wherein said sensing uses an infrared spectrum photocell for sensing infrared energy received from said image scene during illumination by said flash unit (Col 3 Lines 57 – 68, “The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24”).

Regarding claim 14, Farrington further discloses the method of claim 13, wherein said sensing uses a visible light spectrum photocell for sensing ambient light energy received from said image scene before illumination by said flash unit (Col 3 Lines 57 – 68, “The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of

the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24").

Regarding claim 15, Farrington further discloses the method of claim 12, wherein said scanning aperture shutter includes separate, proportionately operable, variable apertures for image capture and said step of sensing (See Figure 1 Separate Apertures are used for the film plane and Visible Light Sensor & Non-Visible Frequency Sensor).

Regarding claim 16, Farrington further discloses the method of claim 12, wherein said controlling includes extinguishing said flash unit once a predetermined amount of infrared spectrum energy is sensed during flash unit illumination (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by**

the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22").

Regarding claim 17, Farrington discloses an electronic camera (Figure 1 Single Lens Reflex Camera 10), comprising:

Means for (Figure 1 Film Plane 16 and Film Advancing apparatus 76) capturing an image scene (Col 3 Lines 16 and Col 5 Line 39 - 49);

Means for controlling light (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22)[Col 3 Lines 15 – 56];

Wherein said means for controlling light is located to control light energy received by said means for capturing from said image scene [Col 3 Lines 15 – 56];

Means for (Figure 1 Visible light sensor 32 and Non-visible frequencies sensor 28) sensing a level of light energy received from said image scene, wherein said means for controlling light is able to control said sensed light energy (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter

mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24"); and

Means for (Figure 1 Exposure Electronics Module 48) controlling an exposure responsive to wherein said means for controlling an exposure is adapted to:

Integrate the level of light energy sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are sequentially integrated), illuminate said means for controlling light during said image capture responsive to the integrated level of light energy reaching a first predetermined level, and extinguish said means for controlling light and close said means for capturing responsive to the integrated level of light energy reaching a second predetermined level (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is**

sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22”).

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band camera 16 that uses a CCD camera and the image captured with this camera is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

The combination of Farrington and Yamada does not clearly discloses the flash light illuminated when the integrated level of light reaching a first predetermined level and extinguished when the integrated level of light reaching a second predetermined level.

KSR rational hereby is used that using a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure.

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 18, Farrington further discloses the camera of claim 17, wherein said means for controlling an exposure is adapted to illuminate said means for discharging a flash of light once a predetermined amount of ambient light energy is sensed by said light control means (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is**

extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**").

Regarding claim 19, Farrington further discloses the camera of claim 18, wherein said means for controlling an exposure is adapted to extinguish said means for discharging a flash of light once a predetermined amount of infrared spectrum energy is sensed by said light sensing means during flash unit illumination (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the**

total scene illumination. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**”)..

Regarding claim 20, Farrington further discloses the camera of claim 17, wherein said means for sensing light includes means for sensing visible spectrum and means for sensing infrared spectrum light, and further wherein, said means for controlling an exposure is adapted to use said means for sensing visible spectrum to sense ambient light energy received from said image scene prior to illumination by said means for discharging a flash of light and to use said means for sensing infrared light for sensing infrared spectrum energy received from said image scene during illumination by said flash unit (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The

flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**").

Regarding claim 21, Farrington further discloses the camera of claim 20, wherein said means for controlling light includes separate apertures for said means for capturing an image scene, said means for sensing visible spectrum light and said means for sensing infrared spectrum light (See Figure 1 Separate Apertures are used for the film plane and Visible Light Sensor & Non-Visible Frequency Sensor).

Regarding claim 23, Farrington further discloses the camera of claim 17, wherein said means for discharging a flash of light is constructed integrally with said camera (Col 4 Lines 9 – 13 "The camera 10 is also provided with an electronic flash apparatus 34 together with apparatus for controlling its energization in order to provide a portion of the exposure value to illuminate a scene to be photographed").

Regarding claim 24, Farrington discloses an electronic camera (Figure 1 Single Lens Reflex Camera 10), comprising:

Means for (Figure 1 Film Plane 16 and Film Advancing apparatus 76) capturing an image scene (Col 3 Lines 16 and Col 5 Line 39 - 49);

A means for (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) controlling light energy received by said means for capturing an image scene (Col 3 Lines 15 – 56);

A means for (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) discharging a flash of light oriented to illuminate said image scene (Co1 4 Lines 9 – 13);

A means for (Figure 1 Visible light sensor 32 and Non-visible frequencies sensor 28) sensing visible spectrum energy and infrared spectrum energy received from said image scene, wherein said means for controlling light is able to control said sensed visible spectrum energy and said infrared spectrum energy (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24");

A means for (Figure 1 Visible light sensor 32 and Non-visible frequencies sensor 28) sensing a level of light energy received from said image scene (Col 3 Lines 57 – 68); and

A means for (Figure 1 Exposure Electronics Module 48) controlling an exposure (Col 7 Lines 21 – 53), wherein said means for (Figure 1 Exposure Electronics Module 48) controlling an exposure is adapted to.

Integrate the level of light energy sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are sequentially integrated), illuminate said means for discharging a flash of light during said image capture responsive to the integrated level of light energy reaching a first predetermined level, and extinguish said means for discharging a flash of light and close said means for capturing an image scene responsive to the integrated level of light energy reaching a second predetermined level (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to**

open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22").

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band camera 16 that uses a CCD camera and the image captured with this camera is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

The combination of Farrington and Yamada does not clearly discloses the flash light illuminated when the integrated level of light reaching a first predetermined level and extinguished when the integrated level of light reaching a second predetermined level.

KSR rational hereby is used that using a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing

when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure.

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 25, Farrington further discloses the camera of claim 24, wherein said means for sensing visible spectrum and infrared spectrum are separate devices (See Figure 1, The visible light sensor 32 and Non-Visible Frequency Sensor 28 are separate)

Regarding claim 26, Farrington further discloses the camera of claim 25, wherein said means for controlling light includes separate, proportionately operable, variable apertures for said image capturing means and said light sensing means (See Figure 1 Separate Apertures are used for the film plane and Visible Light Sensor & Non-Visible Frequency Sensor).

Regarding claim 27, Farrington further discloses the camera of claim 24, wherein said means for discharging a flash of light is a quenchable strobe light (Col 7 Lines 21 – 53 and Figure 1, The electronic flash apparatus is Extinguishable or quenchable).

Regarding claim 28, Farrington discloses a method for electronic image capture using a fill flash function (Col 7 Lines 21 – 41, The exposure control system employed herein of the proportional fill flash type), comprising:

Using a means for (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) controlling light to control light energy received by a means for capturing an electronic image (Col 3 Lines 15 – 56);

Sensing a level of visible ambient light energy and infrared energy received from an image scene and controlled by said means for controlling light (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24"); and

Controlling (Figure 1 Exposure Electronics Module 48) said means for controlling light and a means for (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) discharging a flash of light during image capture (Col 7 Lines 21 – 53), wherein said controlling comprises:

Integrating the level of light energy sensed during image capture (Col 7 Lines 21 – 53, The ambient and artificial light respectively sensed by the sensors 32 and 38 are

sequentially integrated), illuminating said means for discharging a flash of light during said image capture responsive to the integrated level of light energy reaching a first predetermined level, and extinguishing said means for discharging a flash of light and closing said means for controlling light responsive to the integrated level of light energy reaching a second predetermined level (Col 7 Lines 21 – 53 "In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**").

Farrington does not clearly disclose whether the image capture device is electronic or not.

Yamada discloses a multi-band camera 16 that uses a CCD camera and the image captured with this camera is directly input into the image data processing unit 30 as digital image data (multi-band image data) (Page 2 Section 0019).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

Regarding claim 29, Farrington discloses an electronic image capture device (Figure 1 Single Lens Reflex Camera 10) adapted for capturing an image scene, comprising:

a means for (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) controlling light energy received by said electronic image capture device (Figure 1 Single Lens Reflex Camera 10) from said image scene (Col 3 Lines 15 – 56);

a means for (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) discharging a flash of light oriented to illuminate said image scene (Col 3 Lines 9 – 13);

a means for (Figure 1 Visible light sensor 32 and Non-visible frequencies sensor

28) sensing a level of light energy received from said image scene, wherein said light control means is able to control said sensed light energy (Col 3 Lines 57 – 68, “The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24”); and

a means for (Figure 1 Exposure Electronics Module 48) controlling an exposure responsive to wherein said means for controlling an exposure control system is adapted to integrate the level of light energy sensed during image capture (Col 7 Lines 21 – 53), Illuminate said means for discharging a flash of light during said image capture responsive to the integrated level of light energy reaching a first predetermined level, and extinguish said means for discharging a flash of light and close said means for controlling light energy responsive to the integrated level of light energy reaching a second predetermined level (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the

above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**").

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Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images

need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

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Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

Regarding claim 30, Farrington discloses an electronic image capture device adapted for capturing an image scene (Figure 1 Single Lens Reflex Camera 10), comprising:

A light control unit (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade

Position Sensor 33, and Openings 24 and 22) located to control light energy received by said image capture device (Col 3 Lines 15 – 56);

A flash unit (Figure 1 Electronic Flash Apparatus 34 comprising Flash Tube 42) oriented to illuminate said image scene (Col 3 Lines 9 – 13);

A light sensor unit (Figure 1 Visible light sensor 32 and Non-visible frequencies sensor 28) adapted for sensing a level of visible spectrum energy and infrared spectrum energy received from said image scene, wherein said light control unit (Figure 1 Blade Mechanism 18, Shutter Drive 20, Blade Position Sensor 33, and Openings 24 and 22) is able to control said sensed visible spectrum energy and said infrared spectrum energy (Col 3 Lines 57 – 68, "The amount of **artificial light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by an **infrared photodetector 26 (FIG. 2)** within **a non-visible frequencies sensor 28** that senses a corresponding amount of infrared scene energy through the opening 22. The amount of **visible light** admitted to the film plane 16 through the primary apertures of the shutter mechanism 18 is controlled by a signal generated by a **visible light photodetector 30 (FIG. 2)** within a **visible light sensor 32** that senses a corresponding amount of ambient light, through the opening 24"); and

an exposure control system (Figure 1 Exposure Electronics Module 48) responsive said flash unit, wherein said exposure control system is adapted to integrate the level of visible spectrum energy and infrared spectrum energy sensed during image capture, illuminate said flash unit during said image capture responsive to the integrated level of visible spectrum energy and infrared spectrum energy reaching a first

predetermined level, and extinguish said flash unit and close said light control unit responsive to the integrated level of visible spectrum energy and infrared spectrum energy reaching a second predetermined level (Col 7 Lines 21 – 53 “In this exposure control system the exposure control electronics module 48 once again triggers the flash tube 42 through the path 46 at a subject reflectivity related time T_1 to illuminate the scene being photographed with artificial light and then triggers the thyristor 44 at time T_2 through the path 50 to thereby extinguish the light output of the flash tube 42. As explained in the above-noted La Rocque et al. patent, the total amount of image-carrying light transmitted to the film plane 16 is comprised of both artificial and ambient light. The flashtube 42 is fired at full output at the subject distance related time T_1, and **is extinguished at the time t.sub.2 which will enable the flashtube 42 to provide a predetermined percentage (preferably 25 percent) of the total scene illumination**. The remaining portion (75 percent) of the total scene illumination is provided by ambient scene light. **The ambient scene light is sensed by the visible frequencies sensor 32 through the opening 24 at first light or when the primary aperture starts to open as determined by the blade position sensor 33 through time T_2 and from T_2 through the end of exposure. The artificial scene light is sensed during the exposure interval between times T_1 and T_2 by sensing the infrared portion thereof with the non-visible frequencies sensor 28 through the opening 22**”).

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Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the image capture device of Farrington's electronic camera with a CCD to capture an image. The motivation to capture image with electronic image capture device or CCD is information of the original image can be directly digitized by a CCD camera and if the camera is fixed, the individual images need not be brought into registry and the subsequent data processing can be simplified (Page 1 Section 0004).

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Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to the technique Farmington and Yamada with a technique of illuminating a flash light when the integrated level of light reaching a first predetermined level and extinguishing when the integrated level of light reaching a second

predetermined level results in a predictable result. Which is solving a improper exposure. The motivation to do so is that to properly expose a foreground and background of an image resulting in properly exposed image.

4. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farrington (US 4,941,011) in view of Yamada (US 2002/0090145 A1) in further view of Omura (US 5,943,515).

Regarding claim 6 and 22 Farrington in view of Yamada further discloses the camera of claim 1, wherein said exposure control system is adapted to generate control signals for a flash unit (Col 4 Lines 13 – 33 "The DC-DC voltage converter 38 operates in a conventional manner to convert a DC voltage as may be derived from a battery 40 of the camera 10, which can be in the order of 6 volts, to a suitable operating voltage such as 280 volts. A flash tube 42 and a current interrupting thyristor 44 are connected in a series relation and collectively in parallel with respect to the main storage capacitor 36. The flash tube 42 may be energized by a suitable trigger signal on a path 46 from a conventional trigger circuit (not shown) within an exposure control module 48, and the thyristor 44 may be triggered to interrupt current through the flash tube 42 by a suitable trigger signal on a path 50 from another conventional trigger circuit (not shown) that is also included within the exposure control electronics module 48").

However Farrington and Yamada do not clearly disclose the flash unit being detachable or external to the camera.

Omura discloses a detachable flash unit (Col 5 Lines 21 – 24 "External Flash Unit").

Therefore it would have been obvious to one ordinary skilled in the art at the time invention was made to modify the flash unit of Farrington with an external or detachable flash unit of Omura. The motivation to use an external unit is that, external flash unit offers much more versatility and power than a fixed position or built-in flash. External flash units provide increased flash range, more control of light direction, faster recycle times and they virtually eliminate red eye thereby improving the quality of the image.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SELAM GEBRIEL whose telephone number is. The examiner can normally be reached on Monday - Friday 8:30 - 5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the

automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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